



# SEQUENCE LISTING

<110> Protein Design Labs, Inc.  
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Jeffrey, Ursula  
Bhaskar, Vinay

<120> Chimeric and Humanized Antibodies to alpha5beta1 Integrin That  
Modulate Angiogenesis

<130> 05882.0178.NPUS01

<140> 10/724,274  
<141> 2003-11-26

<150> 60/429,743  
<151> 2002-11-26

<150> 60/508,149  
<151> 2003-09-30

<160> 47

<170> PatentIn version 3.2

<210> 1  
<211> 124  
<212> PRT  
<213> mus musculus

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Ser Leu Ser Ile Thr Cys Thr Ile Ser Gly Phe Ser Leu Thr Asp Tyr  
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Gly Val His Trp Val Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Leu  
35 40 45

Val Val Ile Trp Ser Asp Gly Ser Ser Thr Tyr Asn Ser Ala Leu Lys  
50 55 60

Ser Arg Met Thr Ile Arg Lys Asp Asn Ser Lys Ser Gln Val Phe Leu  
65 70 75 80

Ile Met Asn Ser Leu Gln Thr Asp Asp Ser Ala Met Tyr Tyr Cys Ala  
85 90 95

Arg His Gly Thr Tyr Tyr Gly Met Thr Thr Thr Gly Asp Ala Leu Asp  
100 105 110

Tyr Trp Gly Gln Gly Thr Ser Val Thr Val Ser Ser  
115 120

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Gln Val Gln Leu Val Glu Ser Gly Pro Gly Leu Val Gln Pro Gly Gly  
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Ser Leu Arg Ile Ser Cys Ala Ile Ser Gly Phe Ser Leu Thr Asp Tyr  
20 25 30

Gly Val His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Leu  
35 40 45

Val Val Ile Trp Ser Asp Gly Ser Ser Thr Tyr Asn Ser Ala Leu Lys  
50 55 60

Ser Arg Met Thr Ile Ser Lys Asp Asn Ser Lys Ser Thr Val Tyr Leu  
65 70 75 80

Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Met Tyr Tyr Cys Ala  
85 90 95

Arg His Gly Thr Tyr Tyr Gly Met Thr Thr Thr Gly Asp Ala Leu Asp  
100 105 110

Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser  
115 120

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Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly  
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Ser Leu Arg Ile Ser Cys Ala Ile Ser Gly Phe Ser Leu Thr Asp Tyr  
20 25 30

Gly Val His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Leu  
35 40 45

Val Val Ile Trp Ser Asp Gly Ser Ser Thr Tyr Asn Ser Ala Leu Lys  
50 55 60

Ser Arg Met Thr Ile Ser Lys Asp Asn Ser Lys Asn Thr Val Tyr Leu  
65 70 75 80

Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys Ala  
85 90 95

Arg His Gly Thr Tyr Tyr Gly Met Thr Thr Thr Gly Asp Ala Leu Asp  
100 105 110

Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser  
115 120

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Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly  
1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Ser Leu Thr Asp Tyr  
20 25 30

Gly Val His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val  
35 40 45

Ser Val Ile Trp Ser Asp Gly Ser Ser Thr Tyr Asn Ser Ala Leu Lys  
50 55 60

Ser Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr Leu  
65 70 75 80

Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys Ala  
85 90 95

Arg His Gly Thr Tyr Tyr Gly Met Thr Thr Thr Gly Asp Ala Leu Asp  
100 105 110

Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser  
115 120

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Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly  
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Ser Leu Arg Leu Ser Cys Ala Ile Ser Gly Phe Ser Leu Thr Asp Tyr  
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Gly Val His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Leu  
35 40 45

Val Val Ile Trp Ser Asp Gly Ser Ser Thr Tyr Asn Ser Ala Leu Lys  
50 55 60

Ser Arg Met Thr Ile Ser Lys Asp Asn Ser Lys Ser Thr Val Tyr Leu  
65 70 75 80

Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys Ala  
85 90 95

Arg His Gly Thr Tyr Tyr Gly Met Thr Thr Thr Gly Asp Ala Leu Asp  
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Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser  
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Gln Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly  
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Ser Leu Arg Ile Ser Cys Ala Ile Ser Gly Phe Ser Leu Thr Asp Tyr  
20 25 30

Gly Val His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Leu  
35 40 45

Val Val Ile Trp Ser Asp Gly Ser Ser Thr Tyr Asn Ser Ala Leu Lys  
50 55 60

Ser Arg Met Thr Ile Ser Lys Asp Asn Ser Lys Ser Thr Val Tyr Leu  
65 70 75 80

Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Met Tyr Tyr Cys Ala  
85 90 95

Arg His Gly Thr Tyr Tyr Gly Met Thr Thr Thr Gly Asp Ala Leu Asp  
100 105 110

Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser  
115 120

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Gln Ile Val Leu Thr Gln Ser Pro Ala Ile Met Ser Ala Ser Leu Gly  
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Glu Arg Val Thr Met Thr Cys Thr Ala Ser Ser Ser Val Ser Ser Asn  
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Tyr Leu His Trp Tyr Gln Gln Lys Pro Gly Ser Ala Pro Asn Leu Trp  
35 40 45

Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ala Arg Phe Ser  
50 55 60

Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Ser Met Glu  
65 70 75 80

Ala Glu Asp Ala Ala Thr Tyr Tyr Cys His Gln Tyr Leu Arg Ser Pro  
85 90 95

Pro Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg  
100 105

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Asp Ile Gln Leu Thr Gln Ser Pro Ser Ser Met Ser Ala Ser Leu Gly  
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Asp Arg Val Thr Met Thr Cys Thr Ala Ser Ser Ser Val Ser Ser Asn  
20 25 30

Tyr Leu His Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Asn Leu Trp  
35 40 45

Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ser Arg Phe Ser  
50 55 60

Gly Ser Gly Ser Gly Thr Asp Tyr Thr Leu Thr Ile Ser Ser Met Gln  
65 70 75 80

Pro Glu Asp Phe Ala Thr Tyr Tyr Cys His Gln Tyr Leu Arg Ser Pro  
85 90 95

Pro Thr Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys Arg  
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<210> 9  
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<213> Artificial Sequence

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<400> 9

Asp Ile Gln Leu Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly  
1 5 10 15

Asp Arg Val Thr Met Thr Cys Thr Ala Ser Ser Ser Val Ser Ser Asn  
20 25 30

Tyr Leu His Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Trp  
35 40 45

Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ser Arg Phe Ser  
50 55 60

Gly Ser Gly Ser Gly Thr Asp Tyr Thr Leu Thr Ile Ser Ser Met Gln  
65 70 75 80

Pro Glu Asp Phe Ala Thr Tyr Tyr Cys His Gln Tyr Leu Arg Ser Pro  
85 90 95

Pro Thr Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys Arg  
Page 6

100

105

<210> 10  
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 <213> Artificial Sequence

<220>  
 <223> humanized antibody

<400> 10

Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly  
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Asp Arg Val Thr Ile Thr Cys Thr Ala Ser Ser Ser Val Ser Ser Asn  
 20 25 30

Tyr Leu His Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu  
 35 40 45

Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ser Arg Phe Ser  
 50 55 60

Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln  
 65 70 75 80

Pro Glu Asp Phe Ala Thr Tyr Tyr Cys His Gln Tyr Leu Arg Ser Pro  
 85 90 95

Pro Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg  
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<400> 11

Asp Ile Gln Leu Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly  
 1 5 10 15

Asp Arg Val Thr Ile Thr Cys Thr Ala Ser Ser Ser Val Ser Ser Asn  
 20 25 30

Tyr Leu His Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Trp  
 35 40 45

Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ser Arg Phe Ser  
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55

60

Gly Ser Gly Ser Gly Thr Asp Tyr Thr Leu Thr Ile Ser Ser Leu Gln  
65 70 75 80

Pro Glu Asp Phe Ala Thr Tyr Tyr Cys His Gln Tyr Leu Arg Ser Pro  
85 90 95

Pro Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg  
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<210> 12  
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<220>  
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<400> 12

Asp Ile Gln Leu Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly  
1 5 10 15

Asp Arg Val Thr Met Thr Cys Thr Ala Ser Ser Ser Val Ser Ser Asn  
20 25 30

Tyr Leu His Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Trp  
35 40 45

Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ser Arg Phe Ser  
50 55 60

Gly Ser Gly Ser Gly Thr Asp Tyr Thr Leu Thr Ile Ser Ser Leu Gln  
65 70 75 80

Pro Glu Asp Phe Ala Thr Tyr Tyr Cys His Gln Tyr Leu Arg Ser Pro  
85 90 95

Pro Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg  
100 105

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tgcaccatct cagggttctc attaacccgac tatgggtgttc actggggttcg ccagcctcca 180



ggaaagggtc tggagtggct ggtagtgatt tggagtgatg gaagctcaac ctataattca	240
gctctcaaat ccagaatgac catcaggaag gacaactcca agagccaagt tttcttaata	300
atgaacagtc tccaaactga tgactcagcc atgtactact gtgccagaca tggaacttac	360
tacggtatga ctacgacggg ggatgctttg gactactggg gtcaaggaac ctcagtcacc	420
gtctcctca	429

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 <212> DNA  
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agaggacaaa ttgttctcac ccagtctcca gcaatcatgt ctgcatctct aggggaacgg	120
gtcaccatga cctgcactgc cagttcaagt gtaagttcca attacttgca ctggtaccag	180
cagaagccag gatccgcccc caatctctgg atttatagca catccaacct ggcttctgga	240
gtcccagctc gtttcagtgg cagtgggtct gggacctctt actctctcac aatcagcagc	300
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<210> 15  
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 <212> DNA  
 <213> Artificial Sequence

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tgcaccatct cagggttctc attaaccgac tatggtgttc actgggttcg ccagcctcca	180
ggaaagggtc tggagtggct ggtagtgatt tggagtgatg gaagctcaac ctataattca	240
gctctcaaat ccagaatgac catcaggaag gacaactcca agagccaagt tttcttaata	300
atgaacagtc tccaaactga tgactcagcc atgtactact gtgccagaca tggaacttac	360
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gtctcgagc	429

<210> 16  
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<400> 16

Met Ala Val Leu Gly Leu Leu Leu Cys Leu Val Thr Phe Pro Ser Cys  
1 5 10 15

Val Leu Ser Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala  
20 25 30

Pro Ser Gln Ser Leu Ser Ile Thr Cys Thr Ile Ser Gly Phe Ser Leu  
35 40 45

Thr Asp Tyr Gly Val His Trp Val Arg Gln Pro Pro Gly Lys Gly Leu  
50 55 60

Glu Trp Leu Val Val Ile Trp Ser Asp Gly Ser Ser Thr Tyr Asn Ser  
65 70 75 80

Ala Leu Lys Ser Arg Met Thr Ile Arg Lys Asp Asn Ser Lys Ser Gln  
85 90 95

Val Phe Leu Ile Met Asn Ser Leu Gln Thr Asp Asp Ser Ala Met Tyr  
100 105 110

Tyr Cys Ala Arg His Gly Thr Tyr Tyr Gly Met Thr Thr Thr Gly Asp  
115 120 125

Ala Leu Asp Tyr Trp Gly Gln Gly Thr Ser Val Thr Val Ser Ser  
130 135 140

<210> 17  
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<212> DNA  
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<400> 17

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gtcaccatga cctgcactgc cagttcaagt gtaagttcca attacttgca ctggtaccag	180
cagaagccag gatccgcccc caatctctgg atttatagca catccaacct ggcttctgga	240
gtcccagctc gtttcagtgg cagtgggtct gggacctctt actctctcac aatcagcagc	300
atggaggctg aagatgctgc cacttattac tgccaccagt atcttcgttc cccaccgacg	360
ttcgggtggag gcaccaagct cgagatcaaa	390

<210> 18  
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 <212> PRT  
 <213> Artificial Sequence

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<400> 18

Met Asp Phe Gln Val Gln Ile Phe Ser Phe Leu Leu Ile Ser Ala Ser  
 1 5 10 15

Val Ile Met Ser Arg Gly Gln Ile Val Leu Thr Gln Ser Pro Ala Ile  
 20 25 30

Met Ser Ala Ser Leu Gly Glu Arg Val Thr Met Thr Cys Thr Ala Ser  
 35 40 45

Ser Ser Val Ser Ser Asn Tyr Leu His Trp Tyr Gln Gln Lys Pro Gly  
 50 55 60

Ser Ala Pro Asn Leu Trp Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly  
 65 70 75 80

Val Pro Ala Arg Phe Ser Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu  
 85 90 95

Thr Ile Ser Ser Met Glu Ala Glu Asp Ala Ala Thr Tyr Tyr Cys His  
 100 105 110

Gln Tyr Leu Arg Ser Pro Pro Thr Phe Gly Gly Gly Thr Lys Leu Glu  
 115 120 125

Ile Lys  
 130

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 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> chimeric antibody

<400> 19

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tgtccatcac atgcaccatc tcagggttct cattaaccga ctatggtgtt cactgggttc	180
gccagcctcc aggaaagggc ctggagtggc tggtagtgat ttggagtgat ggaagctcaa	240

cctataattc agctctcaaa tccagaatga ccatcaggaa ggacaactcc aagagccaag 300  
 ttttcttaat aatgaacagt ctccaaactg atgactcagc catgtactac tgtgccagac 360  
 atggaactta ctacggaatg actacgacgg gggatgcttt ggactactgg ggtcaaggaa 420  
 cctcagtcac cgtctcctca ggtaagaatg gcctctaga 459

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<400> 20

Met Ala Val Leu Gly Leu Leu Leu Cys Leu Val Thr Phe Pro Ser Cys  
 1 5 10 15

Val Leu Ser Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala  
 20 25 30

Pro Ser Gln Ser Leu Ser Ile Thr Cys Thr Ile Ser Gly Phe Ser Leu  
 35 40 45

Thr Asp Tyr Gly Val His Trp Val Arg Gln Pro Pro Gly Lys Gly Leu  
 50 55 60

Glu Trp Leu Val Val Ile Trp Ser Asp Gly Ser Ser Thr Tyr Asn Ser  
 65 70 75 80

Ala Leu Lys Ser Arg Met Thr Ile Arg Lys Asp Asn Ser Lys Ser Gln  
 85 90 95

Val Phe Leu Ile Met Asn Ser Leu Gln Thr Asp Asp Ser Ala Met Tyr  
 100 105 110

Tyr Cys Ala Arg His Gly Thr Tyr Tyr Gly Met Thr Thr Thr Gly Asp  
 115 120 125

Ala Leu Asp Tyr Trp Gly Gln Gly Thr Ser Val Thr Val Ser Ser  
 130 135 140

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<400> 21

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taggggaacg ggtcaccatg acctgcactg ccagttcaag tgtcagttcc aattacttgc 180  
actggtacca gcagaagcca ggatccgccc ccaatctctg gatttatagc acatccaacc 240  
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caatcagcag catggaggct gaagatgctg ccacttatta ctgccaccag tatcttcggt 360  
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<210> 22  
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<212> PRT  
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<223> chimeric antibody

<400> 22

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1 5 10 15

Val Ile Met Ser Arg Gly Gln Ile Val Leu Thr Gln Ser Pro Ala Ile  
20 25 30

Met Ser Ala Ser Leu Gly Glu Arg Val Thr Met Thr Cys Thr Ala Ser  
35 40 45

Ser Ser Val Ser Ser Asn Tyr Leu His Trp Tyr Gln Gln Lys Pro Gly  
50 55 60

Ser Ala Pro Asn Leu Trp Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly  
65 70 75 80

Val Pro Ala Arg Phe Ser Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu  
85 90 95

Thr Ile Ser Ser Met Glu Ala Glu Asp Ala Ala Thr Tyr Tyr Cys His  
100 105 110

Gln Tyr Leu Arg Ser Pro Pro Thr Phe Gly Gly Gly Thr Lys Leu Glu  
115 120 125

Ile Lys  
130

<210> 23

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 ccaggaaagg gtctggagtg gctggtagtg atttgagtg atggaagctc aacctataat 180  
 tcagctctca aatccagaat gaccatcagg aaggacaact ccaagagcca agttttctta 240  
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 aaggagtaca agtgcaagg ctccaacaaa ggcctcccgt cctccatcga gaaaaccatc 1020  
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 tggcaggagg ggaatgtctt ctcatgtccc gtgatgcatg aggctctgca caaccactac 1320  
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<220>  
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<400> 24

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 ccaggatccg cccccaatct ctggatttat agcacatcca acctggcttc tggagtccca 180  
 gctcgtttca gtggcagtgg gtctgggacc tcttactctc tcacaatcag cagcatggag 240  
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 ccatctgatg agcagttgaa atctggaact gcctctgttg tgtgcctgct gaataacttc 420  
 tatcccagag aggccaaaagt acagtggaag gtggataacg ccctccaatc gggtaactcc 480  
 caggagagtg tcacagagca ggacagcaag gacagcacct acagcctcag cagcaccctg 540  
 acgctgagca aagcagacta cgagaaacac aaagtctacg cctgcgaagt cacccatcag 600  
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<220>  
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Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala Pro Ser Gln  
 1 5 10 15

Ser Leu Ser Ile Thr Cys Thr Ile Ser Gly Phe Ser Leu Thr Asp Tyr  
 20 25 30

Gly Val His Trp Val Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Leu  
 35 40 45

Val Val Ile Trp Ser Asp Gly Ser Ser Thr Tyr Asn Ser Ala Leu Lys  
 50 55 60

Ser Arg Met Thr Ile Arg Lys Asp Asn Ser Lys Ser Gln Val Phe Leu  
 65 70 75 80

Ile Met Asn Ser Leu Gln Thr Asp Asp Ser Ala Met Tyr Tyr Cys Ala  
 85 90 95

Arg His Gly Thr Tyr Tyr Gly Met Thr Thr Thr Gly Asp Ala Leu Asp  
 100 105 110

Tyr Trp Gly Gln Gly Thr Ser Val Thr Val Ser Ser Ala Ser Thr Lys  
 115 120 125

Gly Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu  
 130 135 140  
 Ser Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro  
 145 150 155 160  
 Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr  
 165 170 175  
 Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val  
 180 185 190  
 Val Thr Val Pro Ser Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys Asn  
 195 200 205  
 Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu Ser  
 210 215 220  
 Lys Tyr Gly Pro Pro Cys Pro Ser Cys Pro Ala Pro Glu Phe Leu Gly  
 225 230 235 240  
 Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met  
 245 250 255  
 Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser Gln  
 260 265 270  
 Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val  
 275 280 285  
 His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Tyr  
 290 295 300  
 Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly  
 305 310 315 320  
 Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ser Ser Ile  
 325 330 335  
 Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val  
 340 345 350  
 Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met Thr Lys Asn Gln Val Ser  
 355 360 365  
 Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu  
 370 375 380



Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro  
385 390 395 400

Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Arg Leu Thr Val  
405 410 415

Asp Lys Ser Arg Trp Gln Glu Gly Asn Val Phe Ser Cys Ser Val Met  
420 425 430

His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser  
435 440 445

Leu Gly Lys  
450

<210> 26  
<211> 215  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> chimeric antibody

<400> 26

Gln Ile Val Leu Thr Gln Ser Pro Ala Ile Met Ser Ala Ser Leu Gly  
1 5 10 15

Glu Arg Val Thr Met Thr Cys Thr Ala Ser Ser Ser Val Ser Ser Asn  
20 25 30

Tyr Leu His Trp Tyr Gln Gln Lys Pro Gly Ser Ala Pro Asn Leu Trp  
35 40 45

Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ala Arg Phe Ser  
50 55 60

Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Ser Met Glu  
65 70 75 80

Ala Glu Asp Ala Ala Thr Tyr Tyr Cys His Gln Tyr Leu Arg Ser Pro  
85 90 95

Pro Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg Thr Val Ala  
100 105 110

Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser  
115 120 125

Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu  
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130	135	140
Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser		
145	150	155 160
Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu		
	165	170 175
Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val		
	180	185 190
Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro Val Thr Lys		
	195	200 205
Ser Phe Asn Arg Gly Glu Cys		
	210	215

<210> 27  
 <211> 696  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> chimeric antibody

<400> 27  
 caggtgcagc tgaaggagtc aggacctggc ctggtggcgc cctcacagag cctgtccatc 60  
 acatgcacca tctcaggggtt ctcatataacc gactatgggtg ttacttgggt tgcgcagcct 120  
 ccaggaaagg gtctggagtg gctggtagtg atttggagtg atggaagctc aacctataat 180  
 tcagctctca aatccagaat gaccatcagg aaggacaact ccaagagcca agttttctta 240  
 ataatgaaca gtctccaaac tgatgactca gccatgtact actgtgccag acatggaact 300  
 tactacggaa tgactacgac gggggatgct ttggactact ggggtcaagg aacctcagtc 360  
 accgtctcct cagcttccac caagggccca tccgtcttcc ccctggcgcc ctgctccagg 420  
 agcacctccg agagcacagc cgccctgggc tgcttgggtca aggactactt ccccgaaccg 480  
 gtgacgggtg cgtggaactc aggcgccctg accagcggcg tgcacacctt cccggctgtc 540  
 ctacagtcct caggactcta ctccctcagc agcgtggtga ccgtgccctc cagcagcttg 600  
 ggcacgaaga cctacacctg caacgtagat cacaagccca gcaacaccaa ggtggacaag 660  
 agagttgagt ccaaatatgg tcccccatgc ccatca 696

<210> 28  
 <211> 232  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> chimeric antibody

<400> 28

Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala Pro Ser Gln  
1 5 10 15

Ser Leu Ser Ile Thr Cys Thr Ile Ser Gly Phe Ser Leu Thr Asp Tyr  
20 25 30

Gly Val His Trp Val Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Leu  
35 40 45

Val Val Ile Trp Ser Asp Gly Ser Ser Thr Tyr Asn Ser Ala Leu Lys  
50 55 60

Ser Arg Met Thr Ile Arg Lys Asp Asn Ser Lys Ser Gln Val Phe Leu  
65 70 75 80

Ile Met Asn Ser Leu Gln Thr Asp Asp Ser Ala Met Tyr Tyr Cys Ala  
85 90 95

Arg His Gly Thr Tyr Tyr Gly Met Thr Thr Thr Gly Asp Ala Leu Asp  
100 105 110

Tyr Trp Gly Gln Gly Thr Ser Val Thr Val Ser Ser Ala Ser Thr Lys  
115 120 125

Gly Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu  
130 135 140

Ser Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro  
145 150 155 160

Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr  
165 170 175

Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val  
180 185 190

Val Thr Val Pro Ser Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys Asn  
195 200 205

Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu Ser  
210 215 220

Lys Tyr Gly Pro Pro Cys Pro Ser  
225 230

<210> 29

<211> 1353  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> chimeric antibody

<400> 29  
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 tcatgcgccg cctcaggggtt ctcattaacc gactatggtg ttcactgggt tcgccaggcc 120  
 ccaggaaagg gtctggagtg gctggtggtg atttggagtg atggaagctc aacctataat 180  
 tcagctctca aatccagaat gaccatctca aaggacaacg ccaagaacac cgtgtactta 240  
 cagatgaaca gtctcagagc tgaggacacc gccgtgtact actgtgccag acatggaact 300  
 tactacggaa tgactacgac gggggatgct ttggactact ggggtcaagg aaccctggtc 360  
 accgtctcct cagcttccac caagggccca tccgtcttcc ccctggcgcc ctgctccagg 420  
 agcacctccg agagcacagc cgccctgggc tgcctggtca aggactactt ccccgaaccg 480  
 gtgacggtgt cgtggaactc aggcgccctg accagcggcg tgcacacctt cccggctgtc 540  
 ctacagtcct caggactcta ctccctcagc agcgtggtga ccgtgccctc cagcagcttg 600  
 ggcacgaaga cctacacctg caacgtagat cacaagccca gcaacaccaa ggtggacaag 660  
 agagttgagt ccaaatatgg tccccatgc ccatcatgcc cagcacctga gttcctgggg 720  
 ggaccatcag tcttcctgtt cccccaaaa cccaaggaca ctctcatgat ctcccgacc 780  
 cctgaggtca cgtgcgtggt ggtggacgtg agccaggaag accccgaggt ccagttcaac 840  
 tgggtacgtg atggcggtga ggtgcataat gccaaagaaa agccgcggga ggagcagttc 900  
 aacagcacgt accgtgtggt cagcgtcctc accgtcctgc accaggactg gctgaacggc 960  
 aaggagtaca agtgcaaggt ctccaacaaa ggcctcccgt cctccatcga gaaaaccatc 1020  
 tccaaagcca aagggcagcc ccgagagcca caggtgtaca ccctgcccc atcccaggag 1080  
 gagatgacca agaaccaggt cagcctgacc tgcctggtca aaggcttcta cccagcgac 1140  
 atcgccgtgg agtgggagag caatgggcag ccggagaaca actacaagac cacgcctccc 1200  
 gtgctggact ccgacggctc ctcttctc tacagcaggc taaccgtgga caagagcagg 1260  
 tggcaggagg ggaatgtctt ctcatgtccc gtgatgcatg aggctctgca caaccactac 1320  
 acacagaaga gcctctccct gtctctgggt aaa 1353

<210> 30  
 <211> 645  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> chimeric antibody

<400> 30

gaaattgttc tcacccagtc tccagcaacc ctctctctct ctccggggga acgggctacc 60  
 ctctcctgca ctgccagttc aagtgtcagt tccaattact tgcactggta ccagcagaag 120  
 ccaggacagg cccccgtct cctcatttat agcacatcca acctggcttc tggagtccca 180  
 gctcgtttca gtggcagtgg gtctgggacc tcttacaccc tcacaatcag cagcctcgag 240  
 ccagaagatt tcgccgtcta ttactgccac cagtatcttc gttccccacc gacgttcggt 300  
 ggaggcacca aggtcgaaat caaacgaact gtggctgcac catctgtctt catcttccc 360  
 ccatctgatg agcagttgaa atctggaact gcctctgttg tgtgcctgct gaataacttc 420  
 tatcccagag aggccaaagt acagtggaag gtggataacg ccctccaatc gggtaactcc 480  
 caggagagtg tcacagagca ggacagcaag gacagcacct acagcctcag cagcaccctg 540  
 acgctgagca aagcagacta cgagaaacac aaagtctacg cctgcgaagt cacccatcag 600  
 ggcctgagct cgcccgtcac aaagagcttc aacaggggag agtgt 645

<210> 31  
 <211> 451  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> chimeric antibody

<400> 31

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly  
 1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Ser Leu Thr Asp Tyr  
 20 25 30

Gly Val His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Leu  
 35 40 45

Val Val Ile Trp Ser Asp Gly Ser Ser Thr Tyr Asn Ser Ala Leu Lys  
 50 55 60

Ser Arg Met Thr Ile Ser Lys Asp Asn Ala Lys Asn Thr Val Tyr Leu  
 65 70 75 80

Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys Ala  
 85 90 95

Arg His Gly Thr Tyr Tyr Gly Met Thr Thr Thr Gly Asp Ala Leu Asp  
 100 105 110

Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Ala Ser Thr Lys  
 115 120 125

Gly Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu  
 130 135 140  
 Ser Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro  
 145 150 155 160  
 Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr  
 165 170 175  
 Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val  
 180 185 190  
 Val Thr Val Pro Ser Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys Asn  
 195 200 205  
 Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu Ser  
 210 215 220  
 Lys Tyr Gly Pro Pro Cys Pro Ser Cys Pro Ala Pro Glu Phe Leu Gly  
 225 230 235 240  
 Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met  
 245 250 255  
 Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser Gln  
 260 265 270  
 Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val  
 275 280 285  
 His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Tyr  
 290 295 300  
 Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly  
 305 310 315 320  
 Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ser Ser Ile  
 325 330 335  
 Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val  
 340 345 350  
 Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met Thr Lys Asn Gln Val Ser  
 355 360 365  
 Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu  
 370 375 380

Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro  
385 390 395 400

Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Arg Leu Thr Val  
405 410 415

Asp Lys Ser Arg Trp Gln Glu Gly Asn Val Phe Ser Cys Ser Val Met  
420 425 430

His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser  
435 440 445

Leu Gly Lys  
450

<210> 32  
<211> 215  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> chimeric antibody

<400> 32

Glu Ile Val Leu Thr Gln Ser Pro Ala Thr Leu Ser Leu Ser Pro Gly  
1 5 10 15

Glu Arg Ala Thr Leu Ser Cys Thr Ala Ser Ser Ser Val Ser Ser Asn  
20 25 30

Tyr Leu His Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu  
35 40 45

Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ala Arg Phe Ser  
50 55 60

Gly Ser Gly Ser Gly Thr Ser Tyr Thr Leu Thr Ile Ser Ser Leu Glu  
65 70 75 80

Pro Glu Asp Phe Ala Val Tyr Tyr Cys His Gln Tyr Leu Arg Ser Pro  
85 90 95

Pro Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys Arg Thr Val Ala  
100 105 110

Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser  
115 120 125

Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu  
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130	135	140
Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser		
145	150	155 160
Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu		
	165	170 175
Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val		
	180	185 190
Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro Val Thr Lys		
	195	200 205
Ser Phe Asn Arg Gly Glu Cys		
	210	215

<210> 33  
 <211> 6  
 <212> DNA  
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<220>  
 <223> oligonucleotide

<400> 33  
 ctcgag

6

<210> 34  
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 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> oligonucleotide

<400> 34  
 tctaga

6

<210> 35  
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 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> oligonucleotide

<400> 35  
 acgcgt

6

<210> 36  
 <211> 35  
 <212> DNA  
 <213> Artificial Sequence



<220>  
 <223> oligonucleotide  
  
 <400> 36  
 ttttctagac caccatggct gtcctggggc tgctt 35  
  
 <210> 37  
 <211> 47  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> oligonucleotide  
  
 <400> 37  
 ttttctagag gttgtgagga ctcacctgag gagacggtga ctgaggt 47  
  
 <210> 38  
 <211> 31  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> oligonucleotide  
  
 <400> 38  
 tggaacttac tacggaatga ctacgacggg g 31  
  
 <210> 39  
 <211> 31  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> oligonucleotide  
  
 <400> 39  
 ccccgctgta gtcattccgt agtaagttcc a 31  
  
 <210> 40  
 <211> 43  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> oligonucleotide  
  
 <400> 40  
 ttttctagag gccattctta cctgaggaga cggtgactga ggt 43  
  
 <210> 41  
 <211> 35  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> oligonucleotide  
  
 <400> 41

tttacgcgtc caccatggat tttcaggatgc agatt 35

<210> 42  
<211> 49  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> oligonucleotide

<400> 42  
ttttctagat taggaaagtg cacttacgtt tgatttccag cttggtgcc 49

<210> 43  
<211> 31  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> oligonucleotide

<400> 43  
tgccagttca agtgtcagtt ccaattactt g 31

<210> 44  
<211> 31  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> oligonucleotide

<400> 44  
caagtaattg gaactgacac ttgaactggc a 31

<210> 45  
<211> 48  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> oligonucleotide

<400> 45  
ttttctagac tttggattct acttacgttt gatttccagc ttggtgcc 48

<210> 46  
<211> 143  
<212> PRT  
<213> mus musculus

<400> 46

Met Ala Val Leu Gly Leu Leu Leu Cys Leu Val Thr Phe Pro Ser Cys  
1 5 10 15

Val Leu Ser Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala  
20 25 30

Pro Ser Gln Ser Leu Ser Ile Thr Cys Thr Ile Ser Gly Phe Ser Leu  
35 40 45

Thr Asp Tyr Gly Val His Trp Val Arg Gln Pro Pro Gly Lys Gly Leu  
50 55 60

Glu Trp Leu Val Val Ile Trp Ser Asp Gly Ser Ser Thr Tyr Asn Ser  
65 70 75 80

Ala Leu Lys Ser Arg Met Thr Ile Arg Lys Asp Asn Ser Lys Ser Gln  
85 90 95

Val Phe Leu Ile Met Asn Ser Leu Gln Thr Asp Asp Ser Ala Met Tyr  
100 105 110

Tyr Cys Ala Arg His Gly Thr Tyr Tyr Gly Met Thr Thr Thr Gly Asp  
115 120 125

Ala Leu Asp Tyr Trp Gly Gln Gly Thr Ser Val Thr Val Ser Ser  
130 135 140

<210> 47  
<211> 130  
<212> PRT  
<213> mus musculus  
  
<400> 47

Met Asp Phe Gln Val Gln Ile Phe Ser Phe Leu Leu Ile Ser Ala Ser  
1 5 10 15

Val Ile Met Ser Arg Gly Gln Ile Val Leu Thr Gln Ser Pro Ala Ile  
20 25 30

Met Ser Ala Ser Leu Gly Glu Arg Val Thr Met Thr Cys Thr Ala Ser  
35 40 45

Ser Ser Val Ser Ser Asn Tyr Leu His Trp Tyr Gln Gln Lys Pro Gly  
50 55 60

Ser Ala Pro Asn Leu Trp Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly  
65 70 75 80

Val Pro Ala Arg Phe Ser Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu  
85 90 95

Thr Ile Ser Ser Met Glu Ala Glu Asp Ala Ala Thr Tyr Tyr Cys His  
100 105 110

Gln Tyr Leu Arg Ser Pro Pro Thr Phe Gly Gly Gly Thr Lys Leu Glu  
115 120 125

Ile Lys  
130